What is claimed:

1. A method for performing automatic pacing interval optimization for each of a plurality of different heart rate ranges, comprising:

(a) monitoring a patient's heart rate;

(b) for each of the plurality of different heart rate ranges, pacing the patient's heart using a plurality of different pacing intervals and measuring a corresponding hemodynamic response for each interval;

(c) storing information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response; and

(d) determining at least one preferred pacing interval, for each heart rate range, based on the stored information;

wherein steps (a) through (d) are performed by an implantable device without human interaction.

2. The method of claim 1, wherein step (d) includes periodically updating at least one preferred pacing interval for each heart rate range.

3. The method of claim 1, wherein step (d) includes updating at least one preferred pacing interval for at least one heart rate range, at least once per day.

4. The method of claim 1, wherein each time new information is stored for one of the heart rate ranges in step (c), step (d) includes updating at least one preferred pacing interval for that heart rate range.

5. The method of claim 1, wherein each time at least a predetermined amount of new information is stored for one of the heart rate ranges in step (c), step (d) includes updating at least one preferred pacing interval for that heart rate range.

6. The method of claim 1, wherein step (c) includes storing a plurality of measures of hemodynamic response for each pacing interval.

7. The method of claim 6, wherein the plurality of measures of hemodynamic response for each pacing interval includes a most recently determined measure of hemodynamic response and one or more previously determined measure of hemodynamic response.

8. The method of claim 1, wherein for at least one of the heart rate ranges, the pacing using the plurality of different pacing intervals occurs over noncontiguous periods of time.

9. The method of claim 1, wherein the stored measures of hemodynamic response are relative measures.

10. The method of claim 1, further comprising determining whether significant motion is present, and not performing at least at least one of steps (b) and (c) when significant motion is present.

11. The method of claim 10, wherein the determining whether significant motion is present includes comparing sensor measurements to a threshold.

12. The method of claim 11, further comprising using an accelerometer to determine the sensor measurements.

13. The method of claim 10, wherein the determining whether significant motion is present includes examining a signal, used to produce the measures of hemodynamic response, for signs of motion.

14. An implantable system for performing automatic pacing interval optimization for each of a plurality of different heart rate ranges, comprising:

means for monitoring a patient's heart rate;

means for pacing a patient's heart using a plurality of different pacing intervals, for each of the plurality of different heart rate ranges;

means for measuring hemodynamic response as the patient's heart is paced using the plurality of different pacing intervals, for each of the plurality of different heart rate ranges;

means for storing information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response; and

means for determining at least one preferred pacing interval, for each heart rate range, based on the stored information;

wherein each said means performs its function without human interaction.

15. The system of claim 14, wherein at least one preferred pacing interval for each heart rate range is updated periodically.

16. The system of claim 14, wherein at least one preferred pacing interval for at least one heart rate range, is updated at least once per day.

17. The system of claim 14, wherein each time new information is stored for one of the heart rate ranges, at least one preferred pacing interval for that heart rate range is updated.

18. The system of claim 14, wherein each time at least a predetermined amount of new information is stored for one of the heart rate ranges, at least one preferred pacing interval for that heart rate range is updated.

19. The system of claim 14, wherein a plurality of measures of hemodynamic response are stored for each pacing interval.

20. The system of claim 19, wherein the plurality of measures of hemodynamic response for each pacing interval includes a most recently determined measure of

hemodynamic response and one or more previously determined measure of hemodynamic response.

21. The system of claim 14, wherein for at least one of the heart rate ranges, the information is obtained and stored over noncontiguous periods of time.

22. The system of claim 14, wherein the stored measures of hemodynamic response are relative measures.

23. The system of claim 14, further comprising:

means for determining whether significant motion is present;

wherein said means for measuring homodynamic response does not measure hemodynamic response when significant motion is present.

24. The system of claim 14, further comprising:

means for determining whether significant motion is present;

wherein said means for storing information does not store information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response, when significant motion is present.

25. The system of claim 24, wherein said means for measuring hemodynamic response includes a sensor; and wherein said means for monitoring motion includes said sensor.

26. The system of claim 24, wherein said means for measuring hemodynamic response includes a sensor that produces a signal that is used to produce measures of hemodynamic response; and wherein said signal is also examined for signs of motion.

27. A method for reducing effects that motion artifacts may have on measures of hemodynamic response that are used for pacing interval optimization, comprising:

(a) pacing a patient's heart using a plurality of different pacing intervals;

(b) monitoring motion that may effect measures of hemodynamic response;

(c) while significant motion is not present, obtaining measures of hemodynamic response and storing information that correlates pacing intervals and measures of hemodynamic response; and

(d) while significant motion is present, not storing information that correlates pacing intervals and measures of hemodynamic response.

28. The method of claim 27, wherein the stored information that correlates pacing intervals and measures of hemodynamic response are used for pacing interval optimization.

29. The method of claim 27, further comprising:

(e) determining at least one preferred pacing interval based on the stored information.

30. The method of claim 27, wherein step (b) includes determining whether significant motion is present by comparing sensor measurements to a threshold.

31. The method of claim 27, wherein step (b) includes using an implanted sensor to produce said sensor measurements.

32. The method of claim 31, wherein said implanted sensor comprises an accelerometer.

33. The method of claim 27, wherein a signal produced using a sensor is used for obtaining measures of hemodynamic response and for determining whether significant motion is present

34. The method of claim 27, wherein step (b) includes examining a signal, used for obtaining the measures of hemodynamic response, for signs of motion.

35. A method for reducing effects that motion artifacts may have on measures of hemodynamic response that are used for pacing interval optimization:

(a) monitoring a patient's heart rate;

(b) for each of the plurality of different heart rate ranges, pacing the patient's heart using a plurality of different pacing intervals and measuring a corresponding hemodynamic response for each interval;

(c) monitoring motion that may effect measures of hemodynamic response;

(d) while significant motion is not present, obtaining measures of hemodynamic response and storing information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response;

(e) while significant motion is present, not storing information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response; and

(f) determining at least one preferred pacing interval, for each heart rate range, based on the stored information.

36. A system for reducing effects that motion artifacts may have on measures of hemodynamic response that are used for pacing interval optimization:

means for pacing a patient's heart using a plurality of different pacing intervals;

means for measuring hemodynamic response as the patient's heart is paced using the plurality of different pacing intervals;

mean for monitoring motion that may effect measures of hemodynamic response; and

means for storing information that correlates pacing intervals and measures of hemodynamic response;

wherein measures of hemodynamic response are obtained and stored when the sensor does not detect significant motion; and

wherein measures of hemodynamic response are not stored when the sensor detects significant motion.

37. The system of claim 36, wherein said means for measuring hemodynamic response includes a sensor; and wherein said means for monitoring motion includes said sensor.

38. The system of claim 36, wherein said means for measuring hemodynamic response includes a sensor that produces a signal that is used to produce measures of hemodynamic response; and wherein said signal is also used to monitor motion.

39. The system of claim 36, wherein said means for monitoring motion includes an accelerometer.

40. The system of claim 36, further comprising means for selecting a preferred pacing interval based on the stored information.

41. A system for reducing effects that motion artifacts may have on measures of hemodynamic response that are used for pacing interval optimization, comprising:

means for monitoring a patient's heart rate;

means for pacing a patient's heart using a plurality of different pacing intervals, for each of the plurality of different heart rate ranges;

means for measuring hemodynamic response as the patient's heart is paced using the plurality of different pacing intervals, for each of the plurality of different heart rate ranges;

means for monitoring motion that may effect measures of hemodynamic response; and

means for storing information that correlates the heart rate ranges, pacing intervals and measures of hemodynamic response;

wherein measures of hemodynamic response are obtained and stored when the sensor does not detect significant motion; and

wherein measures of hemodynamic response are not stored when the sensor detects significant motion.

42. The system of claim 41, wherein said means for measuring hemodynamic response includes a sensor; and wherein said means for monitoring motion includes said sensor.

43. The system of claim 41, wherein said means for measuring hemodynamic response includes a sensor that produces a signal that is used to produce measures of hemodynamic response; and wherein said signal is also used to monitor motion.

44. The system of claim 41, wherein said means for monitoring motion includes an accelerometer.

45. The system of claim 41, further comprising means for selecting a preferred pacing interval, for each heart rate range, based on the stored information.

46. A method for performing pacing interval optimization, comprising:

(a) pacing the patient's heart using a plurality of different pacing intervals and measuring a corresponding hemodynamic response for each interval;

(b) storing information that correlates the pacing intervals and measures of hemodynamic response; and

(c) determining at least one preferred pacing interval based on the stored information;

wherein the pacing using the plurality of different pacing intervals occurs over noncontiguous periods of time.

47. The method of claim 46, further comprising determining whether significant motion is present, and not performing at least one of steps (a) and (b) when significant motion is present.

48. The method of claim 47, wherein the determining whether significant motion is present includes comparing sensor measurements to a threshold.

49. The method of claim 46, wherein the stored measures of hemodynamic response are relative measures.

50. A system for performing pacing interval optimization, comprising:

means for pacing a patient's heart using a plurality of different pacing intervals;

means for measuring hemodynamic response as the patient's heart is paced using the plurality of different pacing intervals;

means for storing information that correlates the pacing intervals and measures of hemodynamic response; and

means for determining at least one preferred pacing interval based on the stored information;

wherein said information is obtained and stored over noncontiguous periods of time.

51. The system of claim 50, wherein the stored measures of hemodynamic response are relative measures.

52. The system of claim 50, further comprising:

means for determining whether significant motion is present;

wherein said means for measuring homodynamic response does not measure hemodynamic response when significant motion is present.

53. The system of claim 50, further comprising:

means for determining whether significant motion is present;

wherein said means for storing information does not store information that correlates pacing intervals and measures of hemodynamic response, when significant motion is present.

54. The system of claim 53, wherein said means for measuring hemodynamic response includes a sensor that produces a signal that is used to produce measures of

hemodynamic response; and wherein said signal is also examined to determine whether significant motion is present.